

## 8 文明回眸 | Civilization Glimpse

### Better Forests and Grasslands Contribute to Better Ecological Environment and More Prosperous Civilization: An Overview of Forest and Grassland Ecosystem Development Since the 18th National CPC Congress

The 18th National CPC Congress incorporated for the first time the concept of ecological civilization into the “Five-sphere Integrated Plan”, the overall plan for building socialism with Chinese characteristics, and set “Building a Beautiful China” as the ambitious goal. The 19th National CPC Congress clearly define the guiding principles and practical actions for ecological civilization development, and deliver China’s solemn pledge to the world that it would honor its commitments on both global environmental governance and emission reduction. The CPC Central Committee, led by President Xi Jinping, takes ecological civilization as one of foundations for China’s great rejuvenation and sustainable development, and bring up a series of important views including “lucid water and lush mountains are invaluable assets” and “mountains, rivers, forests, farmlands, lakes, grasslands and deserts are a community of shared life”. Over the past decade, China has experienced the historical and holistic change in its ecoenvironment protection along with the quantum leap in building a beautiful China.

### Progress Towards Achieving Success in Green Development and Saihanba Spirit Shaping

Saihanba Mechanized Forest Farm, located at the southern edge of the Inner Mongolia Plateau and Hunshandak Sandy Land, covers a land of 933 square kilometers. Thanks to three generations’ effort in afforestation for over 60 years, the barren land has been turned into a green land, home to the largest artificial forest in China and even in the world. With unwavering loyalty to the Community Party, the undaunted spirit to overcome difficulties and long-held firm belief in success, the people working there have relentlessly pursued green development by building a green great wall that wards Beijing and Tianjin from sand, replenishes water sources of Liaoning, Tianjin and Hebei, produce more resources for Hebei, and generates income for Inner Mongolia. In their practices in the natural environment protection and restoration, they have shaped and forged the Saihanba Spirit.

## 34 理论观点 | Theoretical Views

### Reflection on Ecological Values

Living creatures, environment and the entire ecosystem are carriers of ecological values whose market value must be recognized. In terms of value attribute, the ecological elements that comply with the laws of nature have objective relevance and subjective preference, and transcends the Taoism. The systematic values of ecosystems and the community of shared life go far beyond the market scope of a certain group or a country. Therefore, the whole global community should make efforts to build a community of shared life by refraining from extravagance and waste of ecological products. We should also assume our due responsibilities to maintain the balance, stability and prosperity of the community so as to satisfy our sense of being and morality, among other spiritual needs.

## 42 特别策划 | Special Focus

### What Global Commitments to Carbon Neutrality and Carbon Peaking Goals Inspire China?

Global warming has pushed humans into more frequent extreme weather events and propelled more and more countries to be aware of the importance of emission reduction. Some 70 countries have set the “net-zero” targets, which will contribute to about 76% of total global emission. China has taken upon itself the daunting task to achieve carbon peaking by 2030 and carbon neutrality by 2060. By analyzing and summarizing the actions, strategies, practical experience and cutting-edge technologies made by various countries in their addressing climate change, the paper contributes China’s wisdom to fulfilling the pledge on nationally determined contributions, promoting global climate governance and achieving the goal of limiting the global temperature rise.

### Tapping Forest Carbon Sinks Potentials to Achieve Goal of Carbon Neutrality and Carbon Peaking

Forests, as the largest carbon sink in terrestrial ecosystems, play an important role in mitigating global climate change and achieving China’s target to achieve carbon peaking and neutrality. China is now facing new challenges in expanding new afforested area, improving forest quality, protecting forest resources, processing forest products, and enhancing science-based monitoring and accounting. forest carbon sink should meet the demands and standards of China’s carbon peaking and neutrality goals, strengthen sci-tech innovation in terms of scientific greening, resource protection, quality improvement, wood and bamboo substitutes, investigation and monitoring, carbon sink trading and talent training. Thus, the potential of forest carbon sinks can be fully unleashed to help achieve the goal of carbon peaking and carbon neutrality.

### Enhancing Planted Forest Carbon Sinks to Achieve Carbon Peaking and Neutrality Goals

In this new era, we should strengthen the protection of forest resources and sustainable and multi-functional forest management, increase the total stocking volume of planted forests while improving the quality and efficiency of planted forest ecosystem to help achieve carbon peaking and neutrality goals. The only way to achieve high-sequestration carbon sink forestry is to keep the forest ecosystems in the most ideal state for maximum growing stock volume and the highest carbon sequestration, and maintain a forestry development model that could maintain a high capture of carbon sink in the long term.

### A “Bamboo + n” Compound Management Mode

As the second forests in China, bamboo forests provide a large number of production and living materials for national economic development. The full understanding of the governing law behind biodiversity, and the reasonable use of the growth time and space characteristics of organisms will benefit the exploration of a scientific compound management mode with bamboo as the main carrier and the establishment of spatially vertical plant-animal-microbe compound management mode. This helps build a “bamboo + n” compound management mode that integrates ecological, economic and social benefits, which falls in the development trend of modern agriculture, modern forestry and their compound management. It is of great significance to implement the concept of “lucid water and lush mountain are valuable assets”, realize carbon peaking and neutrality goals, implement the “rural revitalization” strategy and materialize the four roles of forests as the source of water, grains, assets and carbon sinks.

### Utilizing Soil Carbon Sinks to Achieve Carbon Peaking and Neutrality Goals

Plants fix CO<sub>2</sub> through photosynthesis and enter the soil layer in the form of dead leaves, dead roots or their secretions, which are transformed into organic matters by animals, microorganisms and enzymes and stored in the soil, thus forming soil carbon sink. Climate and human activities are the main factors affecting soil carbon storage and the function of forest soil carbon sequestration. Forest land preparation, harvest intensity, rotation management, mixed multi-species plantation, disease and pest control and fire control can effectively reduce soil carbon emissions and thus increase the carbon sink function.

### Protecting Blue Carbon Ecosystems for Harmonious Human-Ocean Coexistence

Blue carbon is the focal point of global governance hotspot areas such as climate change, biodiversity conservation and sustainable development. China is rich in blue carbon ecosystems with a total area of coastal wetlands about 1738-3965 km<sup>2</sup>, and is one of the few countries in the world that simultaneously boast three blue carbon ecosystems, namely mangrove, seagrass bed and coastal salt marsh. Blue carbon ecosystems are of inestimable ecological values in terms of efficient carbon sequestration, resistance to storms and sea level rise, prevention of soil and water loss, regulation of seawater quality, provision of wildlife habitats and landscape beautification.

### Virtual Power Plant: Energy Digitalization in the Emission Reduction Era

Since the slash-and-burn period, human beings have never stopped exploring and utilizing energy. Thanks to the skyrocketing development of information technology, the Internet provides a new and effective means to refine the use, respond to the demands, and tap the potentials of energy. Against this backdrop, the concept of virtual power plants was born. Equipped with digital technology, we can flexibly adjust customer-side load, coordinate power-generating resources, and solve the conflict, and reach a balance between safe operation of the power system and the demand for energy at a smaller cost, thus realizing the digital transformation of the energy industry.

## 92 美丽乡村 | Beautiful Countryside

### Illuminating Rural Revitalization with “Light”: “PV+” Green Development in Changxing County

Huzhou in Zhejiang Province is the place where President Xi Jinping came up with the concept of “lucid water and lush mountains are invaluable assets”. In recent years, Changxing County of Huzhou has been implementing the concept by fully exploiting local solar energy resources, and striving to do well in the green development of “photovoltaic +”, which has effectively achieved energy conservation and carbon emission reduction while greatly improving the efficiency and modernization of agriculture, fishery and animal husbandry. The county has successfully developed the “photovoltaic+” industry to get rid of poverty, and provided a practical example to help achieve net zero emission and rural revitalization.